

CLAIMS

1. A crane comprising a lower traveling body and an upper rotating body rotatably mounted on the lower traveling body, the upper rotating body including a rotating frame and lifting equipment mounted on the rotating frame, the lifting equipment including a boom and a plurality of types of winches,

wherein many models having different lifting capacities are divided into a plurality of classes, each class including a plurality of models, the models included in each class share a common rotating frame, the common rotating frame being based on the model having the largest lifting capacity in each class, and the rotating frame included in the upper rotating body is such a common rotating frame.

2. The crane according to Claim 1, wherein the rotating frame includes rotating-frame-side winch mounting portions for mounting the winches on the rotating frame, each type of winch is provided with a winch-side mounting portion, the winch-side mounting portion being common to models in the same class, and each winch is mounted on the rotating frame by means of the rotating-frame-side winch mounting portion and the winch-side mounting portion.

3. The crane according to Claim 1 or 2, wherein left and right deck frames are provided on both the left and right sides of the rotating frame, and at least the outer shapes and sizes of the left and right deck frames are common to all models in the same class.

4. The crane according to Claim 3, wherein equipment is mounted on the left and right deck frames by means of mounting portions that are common to models in the same class.

5. The crane according to Claim 3 or 4, wherein the left and right deck frames are divided into a plurality of sections on which different pieces of equipment are mounted.

6. The crane according to Claim 5, wherein the sections of the left and right deck frames are separately mounted on the rotating frame.

7. The crane according to Claim 6, wherein with respect to each section of the left and right deck frames, a plurality of types of sections on which different sizes of pieces of equipment are mounted according to the uses of the machine are mounted on the rotating frame with a common mounting structure.

8. The crane according to Claim 6 or 7, wherein each section of the left and right deck frames is detachably mounted on the rotating frame.

9. A method for assembling a crane, the crane comprising a lower traveling body and an upper rotating body rotatably mounted on the lower traveling body, the upper rotating body including a rotating frame and lifting equipment mounted on the rotating frame, the lifting equipment including a boom and a plurality of types of winches, the method comprising the steps of:

dividing many models having different lifting capacities into a plurality of classes, each class including a plurality of models;

determining a common rotating frame shared by the plurality of models included in each class, on the basis of the model having the largest lifting capacity in each class; and

assembling the upper rotating body on the basis of the rotating frame.

10. A crane comprising a lower traveling body and an upper rotating body rotatably mounted on the lower traveling body, the upper rotating body including a rotating frame, a

boom, a boom raising and lowering apparatus, and a winch, the boom, the boom raising and lowering apparatus, and the winch being mounted on the rotating frame, the boom raising and lowering apparatus being selected from a plurality of types of boom raising and lowering apparatuses,

wherein the rotating frame is common in a class including a plurality of models having different lifting capacities and is based on the model having the largest lifting capacity in the class, and the rotating frame includes common boom-raising-and-lowering-apparatus mounting portions that are common to the plurality of types of boom raising and lowering apparatuses.

11. A crane comprising a lower traveling body and an upper rotating body rotatably mounted on the lower traveling body, the upper rotating body including a rotating frame, a boom, a boom raising and lowering apparatus, and a plurality of winches, the boom, the boom raising and lowering apparatus, and the winches being mounted on the rotating frame,

wherein the rotating frame is common in a class including a plurality of models having different lifting capacities and is based on the model having the largest lifting capacity in the class, and the rotating frame includes a common winch mounting portion that is shared by a

plurality of types of winches having different sizes.

12. A crane comprising a lower traveling body and an upper rotating body rotatably mounted on the lower traveling body, the upper rotating body including a rotating frame, a boom, a boom raising and lowering apparatus, and a plurality of winches, the boom, the boom raising and lowering apparatus, and the winches being mounted on the rotating frame, the boom raising and lowering apparatus being selected from a plurality of types of boom raising and lowering apparatuses,

wherein the rotating frame is common in a class including a plurality of models having different lifting capacities and is based on the model having the largest lifting capacity in the class, the rotating frame includes common boom-raising-and-lowering-apparatus mounting portions that are common to the plurality of types of boom raising and lowering apparatuses, and the rotating frame further includes a common winch mounting portion that is shared by a plurality of types of winches having different sizes.

13. The crane according to Claim 10 or 12, wherein the plurality of types of boom raising and lowering apparatuses include a gantry apparatus and a mast apparatus, the gantry apparatus being mounted on the rotating frame and pivotable

upward and downward with the front and rear lower ends as fulcrums, the mast apparatus including a mast and a small gantry, the mast being pivotable upward and downward with the lower end as a fulcrum, the small gantry being disposed behind the mast and pivotable upward and downward with the front and rear lower ends as fulcrums, and the common boom-raising-and-lowering-apparatus mounting portions include a first common mounting portion in the front of the rotating frame and a second common mounting portion behind the first common mounting portion, one of the front fulcrum of the gantry apparatus and the fulcrum of the mast in the mast apparatus being selectively mounted on the first common mounting portion, one of the rear fulcrum of the gantry apparatus and the rear fulcrum of the small gantry in the mast apparatus being selectively mounted on the second common mounting portion.

14. The crane according to Claim 13, further comprising cylinder supporting means that supports one end of a cylinder that raises and lowers the gantry and a cylinder that raises and lowers the mast of the mast apparatus, at the rotating frame, the cylinder supporting means including a cylinder mounting portion provided in the rotating frame, and two types of brackets that are detachably attached to the cylinder mounting portion and

each being replaceable with the other, wherein one end of one of both cylinders is attached to one of the brackets.

15. The crane according to Claim 14, wherein the cylinder mounting portion has a reaction-force supporting surface that supports the vertical and horizontal components of the cylinder reaction force.

16. The crane according to Claim 11 or 12, wherein the winches include standard winches that are always provided and an optional winch that is provided if necessary, and a common winch mounting portion is provided in the rotating frame for the optional winch.

17. The crane according to Claim 16, wherein the rotating frame is provided with the same number of winch mounting portions as the maximum number of winches including the standard winches and the optional winch mounted on the rotating frame, one of the winch mounting portions serves as the common winch mounting portion on which the optional winch or a winch that is selected from the standard winches and differs in size from the optional winch is mounted, and one of the standard winches that are not selected is mounted on another winch mounting portion.

18. The crane according to any one of Claims 11, 12, 16, and 17, wherein substantially vertical winch plates are provided on either side of each winch in the axial direction, and the common winch mounting portion includes:

at least one vertical plate that is provided on at least one side of the rotating frame in the width direction and supports at least one of the winch plates;

a horizontal plate that is provided in the rotating frame and supports both winch plates; and

an adapter that is disposed between the horizontal plate and one of the winch plates to absorb any variation in the winch size.

19. The crane according to Claim 18, wherein the adapter has a supporting portion that supports the winch plate, and a substantially horizontal mounting portion attached to the horizontal plate.